

Remarks

Claims 1-43, 45-58, 60 and 63-70 are allowed and remain pending. Claim 62 is cancelled without prejudice. Claims 44, 59 and 61 are currently amended and remain pending. Claims 71-73 are previously presented and remain pending.

Claims Rejections-35 USC 103(a)

Applicants traverse Examiner's rejection of claims 44, 59 and 61 per 35 USC §103(a) as being unpatentable over Davids *et al.* (US Patent Application Publication 2003/0161571) in view of Schuppert *et al.* (US-PAT 5,280,189). Neither Davids *et al.* nor Schuppert *et al.* disclose or suggest using a "waveguide comprising: a core comprised of a germanium on silicon heterojunction" as required by the current invention. Furthermore, neither Davids *et al.* nor Schuppert *et al.* disclose or suggest establishing one set of contacts for coupling to the silicon and one set of contacts for coupling to the germanium, as required by the current invention. Applicant has amended claims 44, 59 and 61 and to elucidate this essential limitation of the current invention by further characterizing the nature of the contacts based on a phone conversation with the Examiner of Tuesday August 16, 2005 (attendees: Michele Liu, patent attorney and Renee Jacowitz, patent agent). The following excerpt from amended claim 44 illustrates the requirement that the contacts to the germanium are distinct from and displaced from the contacts to the silicon:

"a first plurality of conductive contacts coupled to the germanium and not coupled to the silicon;

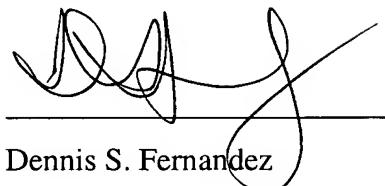
a second plurality of conductive contacts coupled to the silicon and not coupled to the germanium, and wherein said first plurality of conductive contacts are displaced from said second plurality of conductive contacts;"

Applicants traverse Examiner's rejection of claims 71-73. Examiner cites a transistor body labeled 40 from Figure 8C of Davids *et al.* In paragraph 21 of Davids *et al.*, the body labeled 40 is described as "a lateral phototransistor". The "lateral phototransistor" appears to encompass the waveguide core 32, attenuating germanium layer 18, emitter 34, collector 36, p-type base 38 defined by thin silicon layer 12. Operation of this device requires the waveguide core 32 and attenuating Ge layer to be disposed on top of the transistor base 38. In contrast, the "transistor body" of claim 71 of the current invention is "external to the waveguide and displaced from the waveguide". Similarly, the "electronic element" of claim 72 of the current invention is "external to the waveguide and displaced from the waveguide"; and, the transistor of claim 73 of the current invention "is external to the waveguide and displaced from the waveguide".

Claim 1 of Schuppert *et al.* requires the diode structure to be "in close proximity to the waveguide...such that the diode structure is capable of being influenced by electron hole pairs" (Column 4, line 50-52). In contrast, according to the current invention, the "transistor body" of claim 71, the "electronic element" of claim 72 and the "transistor" of claim 73 are required to be "external to the waveguide and displaced from the waveguide".

In view of the foregoing Remarks, it is respectfully submitted by Applicants that all claims are now in condition for allowance. Reconsideration of the rejections is requested, and allowance of the claims at an early date is solicited. No additional fees are required by this paper. If the Examiner has any questions, kindly direct any such queries to the following phone number or email address.

Respectfully submitted,



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